

5 1. A sealing device for use between a gas turbine combustor transition duct aft frame and a turbine inlet, said sealing device comprising:

a first end and a second end in spaced relation thereby forming a circumferential length;

10 a forward face and an aft face in spaced relation thereby forming an axial width;

an inner surface and an outer surface in spaced relation thereby forming a radial height;

15 a plurality of channels extending axially along said inner surface, said channels having a channel width and channel depth;

20 wherein said sealing device is formed of abradable honeycomb having a plurality of honeycomb cells, each cell having a wall thickness and a cell width.

2. The sealing device of Claim 1 wherein said channel width is at least 0.100 inches.

25 3. The sealing device of Claim 2 wherein said channel width is at least 1.2 times greater than said channel depth.

4. The sealing device of Claim 1 wherein said channels pass a controlled amount of compressed air to cool vane platforms at said turbine inlet.

30 5. The sealing device of Claim 1 wherein said wall thickness of said honeycomb is approximately between 0.0014 inches and 0.003 inches.

6. The sealing device of Claim 1 wherein said cell width is approximately between 0.062 inches and 0.125 inches.

5        7. A gas turbine transition duct sealing system comprising:

         a transition duct for transferring hot gases from a combustor to a turbine, said  
         transition duct having an aft frame with at least one bulkhead attached to said aft  
         frame;

10       a sealing device fixed to said at least one bulkhead, said sealing device  
         comprising:

         a first end and a second end in spaced relation thereby forming a

15       circumferential length;

         a forward face and an aft face in spaced relation thereby forming an axial  
         width;

20       an inner surface and an outer surface in spaced relation thereby forming a  
         radial height;

         a plurality of channels extending axially along said inner surface, said  
         channels having a channel width and channel depth;

25       wherein said sealing device is formed of abradable honeycomb having a  
         plurality of honeycomb cells, each cell having a wall thickness and a cell  
         width;

30       a turbine inlet region having a plurality turbine vanes, each of said turbine vanes  
         having at least one platform region;

         wherein said sealing device is in sealing contact with said bulkhead, said aft  
         frame, and said platform region.

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- 5        8. The sealing system of Claim 7 wherein said channel width is at least 0.100 inches.
9. The sealing system of Claim 8 wherein said channel width is at least 1.2 times greater than said channel depth.
- 10       10. The sealing system of Claim 7 wherein said channels pass a controlled amount of compressed air to cool vane platforms at said turbine inlet.
11. The sealing system of Claim 7 wherein said wall thickness is approximately between 0.0014 inches and 0.003 inches.
- 15       12. The sealing system of Claim 7 wherein said cell width is approximately between 0.062 inches and 0.125 inches.
13. The sealing system of Claim 7 wherein said sealing device is fixed to said bulkhead by a means such as brazing.
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